

ABSTRACT

- The present invention provides an olefin polymer having a narrow molecular weight distribution and a specific molecular weight, an olefin polymer having a 5 functional group introduced at the terminal, a tapered polymer containing a segment wherein monomer composition continuously changes in the polymer chain, an olefin polymer having different segments which are bonded to each other, and a process for preparing these polymers.
- 10 The olefin polymers of the invention are polymers of olefins of 2 to 20 carbon atoms and have a number-average molecular weight of not less than 500 and  $M_w/M_n$  of not more than 1.5. In the process for preparing an olefin polymer, an olefin of 2 to 20 carbon atoms is polymerized 15 in the presence of an olefin polymerization catalyst comprising a transition metal compound represented by, for example, the following formula (I):



- wherein M is a transition metal atom of Group 3 to Group 20 11 of the periodic table, m is 1 to 5, n is a number satisfying a valence of M, L is a ligand coordinated to the central metal M and is a ligand containing a heteroatom having no direct bond to the central metal, and X is a halogen atom, a hydrocarbon group or the like.